

Agenda
CFSv.3 Planning Meeting (August 25-26, 2011)
ESSIC Building, College Park, Maryland

Day 1 (August 25)

07:30-08:00 Breakfast

Overview: *(Chair: Huang)*

08:00-08:15: Meeting objectives (**Huang**)
08:15-08:35 NOAA strategic goals in climate and climate model development (**Karl**)
08:35-08:55 USGCRP Modeling Strategy (**Koblinsky**)
08:55-09:15 NCEP view on CFSv3 (**Uccellini**)
09:15-09:30 CPO/MAPP Program (**Mariotti**)
09:30-09:45 National Climate Prediction and Projection (NCPP) Platform (**Rood**)
09:45-10:00 Climate Working Group (CWG) remarks (**Busalacchi**)

10:00-10:20 Break

Session 1: Why is there a need for CFSv3 *(Chair – Lapenta)*

10:20-10:50 CFSv2 overview including ongoing reanalysis and reforecasts (**Saha**)
10:50-11:20 CFSv2 preliminary evaluations (**Kumar**)
11:20-11:40 International and national multi-model ensembles (MME) for monthly/seasonal forecasts (**van den dool**)

11:40-12:00 Getting Lunch (provided)

12:00-12:30 Lunch Presentation: Experience of porting CFSv2 NASA Ames SGI ICE platform (**Marx**)

12:30-14:00 **Breakout discussion (1)**
 ○ Group 1A: Lead: **Saha**; Rapporteur: **X.Zeng**
 ○ Group 1B: Lead: **Kinter**; Rapporteur: **Higgins**

14:00-14:15 Break

Session 2: What does the future CFSv3 look like: a community perspective *(Chair – Higgins)*

14:15-14:45 A framework for seamless predictions (**Kinter**)
14:45-15:15 Complexity and resolution of climate models for climate predictions and projections (**Ramaswamy**)
15:15-15:45 Model software/infrastructure (**Lapenta**)

15:45-17:15 Breakout discussion (2)
 ○ Group 2A: Lead: **Lapenta**; Rapporteur: **Dickinson**
 ○ Group 2B: Lead: **Suarez**; Rapporteur: **Ek**

Day 2 (August 26)

07:30-08:00 Breakfast

Session 3: How to improve the CFS development process *(Chair – Mariotti)*

08:00-08:20 Current analysis development at NCEP/EMC (**Derber**)

08:20-10:40 Model development at major modeling centers and potential synergies with CFSv3

08:20-08:40 NCAR (**Hurrell**)

08:40-09:00 NASA (**Suarez**)

09:00-09:20 GFDL (**Rosati**)

09:20-09:40 ECMWF (**Molteni**)

09:40-10:00 CMCC (**Navarra**)

10:00-10:20 India (**Rao**)

10:20-10:40 Taiwan (**Lu**)

10:40-11:00 Report from NCEP Climate Process Team (CPT) (**Bretherton**)

11:00-11:15: Break

11:15 – 12:45 Breakout discussion (3)

- Group 3A: Lead: **Bretherton**; Rapporteur: **Lord**
- Group 3B: Lead: **Kumar**; Rapporteur: **Tribbia**

12:45-13:30 Lunch (provided)

13:30-16:00 Synthesis and next steps *(Chair: Huang)*

- Reports from breakout groups
- Discussions on the next steps

Climate Forecast System (CFS) Version 3 Planning Meeting

August 25-26, 2011

ESSIC Building, College Park, Maryland

Background

The National Centers for Environmental Prediction (NCEP) implemented the Climate Forecast System version 2 (CFSv2) in March 2011. CFS is a coupled global climate model used for operational intraseasonal-to-interannual (ISI) prediction at NCEP. The current version of CFS, which took 7 years to develop and implement, includes many improvements in all components, including the latest developments in the global atmospheric model (GFS, also used for numerical weather forecast), coupling with a new version of the global ocean model (MOM4), a sea ice model, and an improved land surface model (Noah).

Now that CFSv2 has been implemented, NOAA is turning its attention to the next generation of CFS (CFSv3). In advance of the development cycle for CFSv3, this meeting aims to bring NCEP scientists and the external community together to develop a strategy for CFSv3. Although focused on CFSv3 development, the meeting will benefit from recent discussions being organized by the National Research Council on the US climate modeling strategy for the next 10-20 years. This meeting will also enhance NOAA-wide collaboration as well as partnerships between NOAA and the external community on climate model development, and strategies for improving ISI climate prediction and potentially decadal climate prediction.

Key questions to be addressed:

1. Why is there a need for CFSv3? Discussions will focus on i) NOAA's strategic requirements for climate predictions and projections; ii) major strengths and shortcomings of the current operational versions of CFS, including model components, infrastructure, etc.; and iii) strategies to link modeling efforts for weather, ISI and longer-term climate predictions and projections within NOAA.
2. What does the future CFSv3 look like? Discussions will address i) model complexity (level of process representations); ii) potential benefits of higher resolution vs. larger ensemble size; and iii) model infrastructure (i.e., portability, scalability).
3. How to improve the CFS development process? Topics of discussions include i) a review of the CFSv2 development process, including how input was obtained from outside of NCEP; ii) how external community can contribute to the CFSv3 development effort and what the requirements and mechanisms are (e.g., documentation, accessibility, archive and access of model code and supporting data sets)? and iii) possible synergies between CFSv3 and climate modeling efforts at other modeling centers (e.g., GFDL, NCAR, NASA, COLA, DOE, ECMWF).

Meeting Format:

The two-day meeting will consist of overview presentations and breakout discussions on the key questions and related discussion topics. The meeting will be limited to around 40-50 invited participants. There will be two parallel breakout sessions on each of the three key questions.

Expected Outcome:

A “white paper” that summarizes the discussions and recommendations tied to the key questions and related topics above. The recommendations may include general advice on the CFSv3 development strategy and mechanisms for follow-up.

Key Questions for Breakout Discussions

Breakout Discussion 1: Why is there a need for CFSv3

- What are NOAA's requirements for climate modeling and prediction?
- What is NOAA's vision for operational climate prediction?
- What should be the strategy to link modeling efforts in weather, intraseasonal-to-interannual, and long-term climate predictions and projections within NOAA?
- What are the major model biases in CFSv2?
- What can be done to improve data archive and access for the research and user communities?

Breakout Discussion 2: What does the future CFSv3 look like?

- What level of process representations should be included in the CFSv3?
- How should the benefits and costs of higher resolution, ensemble size, hindcast period, etc be balanced?
- What are the requirements for atmospheric and oceanic data assimilations?
- What is the need to improve CFS model infrastructure (i.e., portability, scalability)?
- What are the benchmarks and metrics for model development?

Breakout Discussion 3: How to improve CFS development process?

- What are the experiences and lessons learned from the CFSv2 development cycle?
- What is the balance of model development at NCEP vs. other NOAA labs/centers vs. the external research community?
- What are the effective mechanisms/facilities to engage the external community to work on CFS diagnosis/evaluation/testing/development?
- How can we improve the model documentation, accessibility, code readability and usage by the external community?
- How to integrate the model evaluation/diagnosis process for CFSv2 into the CFSv3 development process?

List of Invited Participants

NOAA: Uccellini, Karl

CPO: Koblinsky, Mariotti, Barrie

CPC: Higgins; Huang, Kumar, van den Dool, Vintzileos, Halpert

EMC: Lapenta, Pan, Moorthi, White, Saha, Beringer, Ek, Howard, Wu, Derber, Kleist

GFDL: Rosati, Ramaswamy

PMEL: Harrison

OST: Lord, Zhou

Universities: Bretherton, Busalacchi, Dickinson, Kinter, Rood, XB Zeng, Janowiak, B.Huang, Marx, Barneston

NASA: Suarez

NCAR: Hurrell, Tribbia, Neale,

International: Molteni (ECMWF), Navarra (CMCC/Italy), Lu (Taiwan), Rao (India)

Users: XZ Liang, Restrepo, Ray

WYLE: Yang